its boats, fishermen, working-rooms, &c., being open to the use of all naturalists under regulations hereafter to be determined."

Sir John Lubbock, as President of the Linnean Society and a trustee of the British Museum, in seconding this motion said he thought they owed their thanks to Prof. Lankester for the efforts he had made to found the proposed society.

Dr. Günther supported the resolution, which was passed.

Sir Joseph Hooker moved:—That this meeting does hereby agree to constitute itself such a society under the title of "The Society for the Biological Investigation of the Coasts of the United Kingdom." He dilated upon the importance of such a society to the interests of botanical science. The motion was seconded by Prof. Moseley, who appropriately called attention to the fact that most, if not all, life upon this planet was littoral in origin, and afterwards spread on the one hand to the deep sea and on the other to the land.

On the motion of Sir William Bowman, F.R.S., it was resolved that gentlemen whose names follow be requested to act as a provisional council and report to an adjourned meeting to be held on Friday, May 30, as to the constitution and organisation of the society and other matters, and in the meantime have power to admit suitable persons to the membership of the society; further, that Prof. Lankester be asked to act as secretary and Mr. Frank Crisp as treasurer *ad interim*. Those named were the Duke of Argyll, the Earl of Dalhousie, Lord Arthur Russell, the Lord Mayor, the Prime Warden of the Fishmongers' Company, the President of the Royal Society, the Presidents of the Linnean, Zoological, and Royal Microscopical Societies; Dr. W. B. Carpenter, F.R.S.; Mr. W. S. Caine, M.P., Mr. Frank Crisp, Mr. Thomas Christy, Mr. Thiselton Dyer, F.R.S., Prof. Flower, Mr. John Evans (treasurer of the Royal Society), Dr. Albert Günther, F.R.S., Sir Joseph Hooker, Prof. Michael Foster (secretary of the Royal Society), Prof. Ray Lankester, F.R.S., Prof. M. Marshall, Prof. Moseley, F.R.S., Mr. John Murray, F.R.S.E., the Rev Dr. Norman, Mr. George J. Romanes, F.R.S., Prof. Burdon Sanderson, F.R.S., Dr. Sclater, Mr. Adam Sedgwick, Mr. Percy Sladen, Mr. H. C. Sorby, F.R.S., and Mr. Charles Stewart, F.L.S.

Mr. G. J. Romanes, in seconding the motion, took occasion to observe that in his opinion one of the most important functions of the society when formed would be that of conducting researches upon invertebrate physiology. He was sure he would be but carrying with him the assent of all physiologists when he said that it is to the invertebrate forms of life that we must now look for the elucidation of many of the most fundamental problems connected with life-processes. It is in the Invertebrata that we meet with life in its least compounded state, and therefore in the state best suited to observation and experiment directed towards the solution of these fundamental problems. The sea is the great magazine of invertebrate life, and if the rich stores of material therein presented have been hitherto almost entirely neglected by physiologists, the explanation may be found in the fact that physiological research can only be conducted in well-equipped laboratories, which have been of but comparatively recent institution upon the sea-coasts of Europe and America.

Prof. Ray Lankester then moved a vote of thanks to the President of the Royal Society for taking the chair, and said it had been estimated that from 6000*l.* to 10,000*l.* would be required to start the project. He invited immediate subscriptions, payable *ad interim* to the treasurer, Mr. Frank Crisp, 6, Old Jewry, E.C. Sir Joseph Fayrer seconded the motion, and the President having briefly replied, the proceedings terminated.

NOTES

In the death of the youngest and one of the most accomplished of the Queen's sons the cause of education has sustained a loss. The Duke of Albany knew well what science meant, and on several occasions publicly expressed his sense of its value in respect of the nation's welfare, and the necessity for its introduction into our systems of education. There can be no doubt that had he lived he would have rendered service to the best interests of the country. It is so rarely that princes have the tastes and leanings of the late Royal Duke that we could ill afford to lose him.

The organising committee of Section F (Economic Science and Statistics) have arranged the following programme of subjects for discussion at the Montreal meeting of the British Association. The subjects will be distributed over the four or five days which will probably be at the disposal of the Section. Group I. Population: (1) Emigration; (2) Census results; (3) Distribution of wealth and condition of the poor. Group II. Land: (4) Agriculture; (5) Land laws; (6) Forestry. Group III. Trade: (7) Manufactures, shipping, and foreign markets; (8) Internal communication by land and water. Group IV. Finance: (9) Monetary system; (10) Public debts (Governmental and Municipal). Writers have been engaged for most of the subjects in the above programme.

We regret to announce the death, at the age of sixty-seven years, of Mr. Nicolas Trübner, the well-known publisher, who has done so much to place within the reach of the English public some of the best works in German philosophy, science, and learning. He will be missed by a wide circle of friends, among whom are many men of science, English and foreign.

The Prince of Wales has formally urged upon the Corporation and the Livery Companies to lend still further aid to the City and Guilds of London Technical Institute, which is greatly in need of funds; and the Corporation proposes to vote a further sum of 1000*l.* provided the Livery Companies subscribe the rest of the 20,000*l.* needed by the Institute.

As usual there was some pleasant talk at the Civil Engineers' dinner last week; Prof. Huxley in replying to the toast of "Science," said there was one educational aspect which was extremely instructive and important, and that was the insensible and almost unconscious education in science which was carried on upon the masses of the people by the great work of engineers and mechanicians. The work of the engineer and all who were applying the teachings of science was surrounding the population with the symbols of scientific faith.

Mr. W. Saville Kent, F.L.S., F.Z.S., has been appointed Inspector of Fisheries to the Government of Tasmania, and proceeds shortly to the scene of his new duties. The more extensive introduction and distribution of the Salmonidæ already acclimatised in Tasmanian waters, and the resuscitation by artificial culture of the once prolific but now greatly depleted oyster fisheries, are among the special subjects that will engage the attention of the newly appointed Inspector. A systematic investigation of the marine fauna, with the view of turning to profitable account those edible, indigenous forms which are as yet but little utilised for economic purposes, will likewise be initiated. It is to be hoped that the Colonial Government will recognise the fitness of the opportunity that now presents itself of establishing in this quarter of the antipodes a well-equipped if small marine observatory for the artificial cultivation and scientific observation of the habits and developmental phenomena of the many interesting types peculiar to this region, and of which, as yet, biologists possess little or no knowledge. Mr.

Saville Kent's reputation as a marine zoologist, and the experience he has already gained as naturalist to various of the large public aquaria of this country, peculiarly qualifies him for the conduct of original investigation in this new field, which could not fail to yield important results for both the interests of science and the fishing industries of Tasmania.

THE Institution of Naval Architects is meeting this week. The session was opened yesterday under the presidency of the Earl of Ravensworth. The papers down for yesterday were:—On the Riachuelo, by J. D'A. Samuda; description of the electrical launch built last year, by A. F. Yarrow; on the vibration of steam vessels, by Otto Schlick. To-day the following papers will be read:—On cross curves of stability, their uses, and a method of constructing them, obviating the necessity for the usual correction of the differences of the wedges of immersion and emersion, by William Denny, F.R.S.E.; the use of stability calculations in regulating the loading of steamers, by F. Elgar, Professor of Naval Architecture, University of Glasgow; on a new method for calculating, and some new curves for measuring the stability of ships at all angles of inclination, by M. Daymard; on some points of interest in connection with the construction of metacentric diagrams, and the initial stability of vessels, by P. Jenkins; on the combustion of fuel in furnaces of steam boilers by natural draught and by air supplied under pressure, by J. Howden; on the application of hydraulic machinery to the loading, discharging, steering, and working of steamships, by A. B. Brown; cast steel as a material for crank shafts, &c., by J. F. Hall; repairs to steamship machinery, by Andrew K. Hamilton. To-morrow the following are set down for reading:—Contributions to the solution of the problem of stability, by L. Benjamin; on the uses of Amsler's integrator in naval architecture, by Dr. A. Amsler; on the comparative safety of well-decked vessels, by Thomas Phillips; the graphic calculation of the data depending on the form of ships required for determining their stability, by J. C. Spence; description of Alexander Taylor's stability indicator, for showing the initial stability and stowage of ships at any displacement, by A. Taylor; some considerations relating to the riveting of iron ships, by H. H. West; on the ventilation of merchant steamers, by J. Webb; on water brakes, by Capt. F. J. Heathorn, R.A.; on improvements in apparatus and means for indicating the position of a ship's helm, by J. E. Liardet.

THE Geographical Society of Bremen publishes in vol. vii. part I of its *Deutsche Geographische Blätter* an interesting paper, by Dr. A. H. Post, on the development of family life among mankind from an original "matriarchal" condition. He brings forward some new evidence collected by Dr. C. A. Wilken in the Dutch East Indies, showing the existence of Malay families consisting of mothers and their children, to which the fathers do not belong as members at all, being in fact only visitors. Dr. Post, tracing the stages of progressive change under the influence of landholding and the union of individuals in states, which in the course of ages converted matriarchal into patriarchal society, expounds with much clearness the theory which has arisen in the last few years out of the works of Bachofen and McLennan. Some of this clearness arises no doubt from ignoring difficulties, but a sketch of this kind does not involve the responsibilities of a full-grown treatise.

THE International Health Exhibition will be opened by the President, the Prince of Wales, on Thursday, May 8, at 3 p.m.

THE death is announced of Dr. George Engelmann, the well-known botanist, who died at St. Louis on March 3, aged seventy-five. Also of Dr. Siegfried Aronhold, formerly Professor of Natural History at the Berlin Technische Hochschule, who died at Berlin on March 13.

NEWS from the Austrian traveller, Eduard Glaser, who had fallen dangerously ill, states that he has recovered, and left for Haschid on February 6, a part of Arabia hitherto unexplored by Europeans.

M. GABRIEL DE MORTILLET, Conservateur of the Museum of National Antiquities at St. Germain, has begun to issue a new monthly journal, *L'Homme*, entirely devoted to anthropology.

M. FREMY, Director of the Museum of Paris, has published a pamphlet defending the establishment against the Central Administration, which is desirous of appointing a director. Up to the present time the director has been nominated by his fellow professors. This liberal mode of nomination was established by the National Convention in 1793. It is probable that an effort will be made in the present session to extend this privilege to other establishments, as the Observatory and the Conservatoire des Arts et Métiers.

M. FREMY is desirous of establishing on the coast a marine laboratory in connection with the Museum of Paris. It is thought the money may be granted for establishing one in Algeria.

THE motion proposed by Admiral Mouchez to sell the Paris Observatory ground, has been defeated before the Academy of Sciences by a large majority. Only two members, MM. d'Abbadie and Faye, voted with the Admiral.

A CORRESPONDENT referred last week to the changes which have been introduced into the examinations for admission into the Royal Military College, and the subject was brought up in the House of Lords last Thursday by Lord Salisbury. "The change with respect to natural science," he said, "was much to be regretted, because there was no body of men to whom a knowledge of science could be more useful, and conduce more to their happiness, especially when it was considered that they had to pass their time in various parts of the world, often with no adequate employment for their spare hours." The Earl of Morley in reply said that "by the new scheme greater importance was given to modern languages and mathematics, less importance to science, and the English paper had been excluded from Class I. The object of these changes was to improve the examinations, and to encourage the subjects which must be taught. In drawing up this scheme the War Office had been in constant communication with the Civil Service Commissioners, and with many gentlemen interested in education. The main purpose of these examinations was to test the results of general education, and for that purpose the subjects themselves had, as far as possible, to be of a general nature. That constituted one of the evils of the present system. He did not think it was necessary, or even desirable, in framing a scheme of this kind to confine themselves to the curriculum of the public schools. It was, no doubt, a matter of regret that during the last five years the number of successful candidates who came direct from the public institutions to the Royal Military College had diminished rather than increased. He did not wish to speak harshly of the race of private tutors. Some of them were extremely able and ingenious, but as a rule their whole object was mark-making. These tutors did not require their pupils to read the books on which they were examined, but by an ingenious process of analysing their contents all the questions that could be put to them could almost be exhausted. But cram did not last, and it was no substitute for education." The Duke of Cambridge said that "the great object of the examination was to put forward such a syllabus that all young persons educated at the public schools of the country should be able to enter Woolwich or Sandhurst direct without going through the hands of the crammer. What was wanted to bring about this result was a general education which they could say every young gentleman ought to have to fit him for any sphere in life which he might intend to adopt. It would be time enough to teach military subjects when the candidates for the army got into the military schools. Up to that time their education should be general, and not special. The proposed change was entirely with the view of inducing the public schools, such as Wellington, Marlborough, and others, besides Eton and Harrow, to co-operate with the authorities in the endeavour to get rid of cramming." The Marquis of Salisbury believed that "nothing would ever get rid of cramming so long as there was a system of competitive examination. Cramming belonged to competitive examination. He ventured to say that the Government were pursuing their object in rather a dangerous way. If there was a difference between the great public authorities and the public schools, the former should lead. With respect to the question of English literature, he did not understand why boys should not be expected to get a general knowledge of it in the same way that they were expected to have a general knowledge of Latin literature. In France and Germany the language, literature, and history of the country were systematically studied, but we seemed to treat them as matters of no importance, or as things which might be learnt in the nursery, or accidentally in conversation after leaving school."

THE Ninth Annual Meeting of the members of the Sunday Society was held at 9, Conduit Street, W., on Monday last, Prof. W. H. Corfield, M.D., in the chair. The annual report, which was read by Mr. Mark H. Judge, Honorary Secretary, set forth the work of the Society during the past year. It referred at considerable length to the action taken in the House of Lords, and pointed out that the policy embodied in the resolution proposed this year by Lord Thurlow at the request of the National Sunday League differed from that advocated by Lord Dunraven and other representatives of the Sunday Society in both Houses of Parliament. Statistics of the Society's Sunday Art Exhibitions were given. The movement in the provinces had been successful at Newcastle-on-Tyne, the Public Library there having been opened on Sundays by the Town Council. His Grace the Duke of Westminster was elected President of the Society.

Two shocks of earthquake were felt at San Francisco in the afternoon of March 25. The series of earthquakes which began on the 25th ult. continues in the south of Hungary. In Vukovar some slight shocks were again felt on March 27 at 11 p.m. On the night of the 29th about sunset a pretty severe shock of earthquake was felt at Sinope and other places in the neighbourhood. In the town of Costamboul some old buildings fell, but no lives were lost.

THE Easter Monday and Tuesday excursion of the Geologists' Association this year will be to Lincoln; on Saturday, April 26, there will be an excursion to Guildford.

THE number of high-level meteorological stations has been recently increased by the opening of a station at Poni, on the Suram Pass of the Great Caucasus.

MR. CHARLES SMITH, Fellow and Tutor of Sidney-Sussex College, Cambridge, to whose valuable treatise on "Conic Sections" we have already drawn attention, has prepared a new elementary mathematical work which will bear the title, "An Elementary Treatise on Solid Geometry." It will be published almost immediately by Messrs. Macmillan and Co.

THE additions to the Zoological Society's Gardens during the past week include two Malbrouck Monkeys (*Cercopithecus cynosurus* ♀ ♀) from West Africa, presented by Messrs. G. Somerford and G. A. Zobel; an Axis Deer (*Cervus axis* ♀) from India, presented by Mr. L. B. Lewis; a Bosman's Potto (*Perodicticus potto*) from West Africa, presented by Capt. Grant Elliott; a Common Squirrel (*Sciurus vulgaris*), British, presented by Mr. P. Aug Holst; three Herring Gulls (*Larus argentatus*), European, presented by Mr. S. Aloof; a Rose-crested Cockatoo (*Cacatua moluccensis*) from Moluccas, presented by General Rundall, R.E.; a Grecian Ibex (*Capra ægagrus*), South-East European, presented by Mr. Thomas B. Sandwith; a Smooth Snake (*Coronella lævis*), British, presented by Mr. W. H. B. Pain; a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, a Rose-coloured Pastor (*Pastor roseus*) from India, deposited; a Leopard Tortoise (*Testudo pardalis*) from South Africa, an Egyptian Cobra (*Naia haje*) from Africa, purchased; a White-fronted Lemur (*Lemur albifrons*), a Vulpine Phalanger (*Phalangista vulpina*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE DOUBLE-STAR α HERCULIS.—Smyth, in his "Cycle of Celestial Objects," attributes to Sir William Herschel the discovery of the duplicity of this star; but the companion was detected two years earlier than Sir William's first observation, and under somewhat curious circumstances. It was perceived by Maskelyne while observing the meridian passage on August 7, 1777, and only seven days later Christian Mayer, also observing the transit of the star with his mural quadrant, noted it to be double. The particulars are detailed in Mayer's work, "De Novis in Cœlo Sidereo Phenomenis," published at Mannheim in 1779. He had communicated to Maskelyne a number of his results bearing upon the double-stars; and the Greenwich astronomer, in replying towards the end of 1777, relates that he had observed a similar phenomenon in α Herculis on the date given above, "et videns valde obstupui," he remarks, since he had so often observed the star on the meridian without perceiving the companion. Maskelyne considered it of the sixth magnitude, the principal star being estimated a third; the latter he judged to be reddish, and the companion pale; Mayer, who discovered the smaller star on August 14, called it a seventh or eighth magnitude.

Adopting Sir George Airy's intervals for the transit-wires in Maskelyne's instrument, we find from a number of transits of the two components—

For about 1778·2 ... $\Delta\alpha$ ... + 0·324s., $\Delta\delta$ ... − 2″·80.

And hence the angle of position 120°·8, and the distance 5″·47.

Mayer's observations extend from August 14, 1777, to August 26, 1779. His differences of right ascension vary from 0·75s. to 0·2s., and those of declination from 6″ to 1″·8, while his estimates of the magnitude of the smaller star vary from 6 m. to 8·9.

Sir William Herschel's first measures were made on August 29, 1779. Taking means of those made between this date and 1783·252, we find—

Position, 1782·36 ... 116°·9 Distance, 1780·33 ... 4″·88.

VARIABLE STARS.—Mr. Burnham, in a note to No. 545 of his recently published Catalogue of 748 double-stars, remarks: "The principal star is strangely wanting in many of the star catalogues." It was observed by Lamont in zone 364, and estimated 5 m.; it does not occur in Lalande, D'Agelet, or Bessel. On Bremicker's Berlin map it is marked 7 m., and it is 6 m. in Harding's Atlas. In the *Uranometria Argentina* it is called 6·3; Gould has no note upon it. We have also the following estimates:—

1879·345	Burnham	6·5
— ·549	Stone (Cincinnati)	7·5
— ·575	Burnham	6·5
1880·442	Stone	6·0
— ·520	Burnham	5·5
1881·383	,, ...	6·5
— ·578	,, ...	6·8

The star may perhaps vary from about the fifth to the seventh magnitude, but systematic observation is wanted to decide. Its position, brought up from Lamont to 1885·0 is in R.A. 17h. 8m. 46·9s., N.P.D. 104° 27′ 4″.

D'Agelet 5057 (a star to which attention has been already called in this column) deserves frequent examination. It was observed by D'Agelet on July 26, 27, and 29, 1783, being twice noted 6 m. and once 6·5. It was not observed either by Lalande or Bessel, but in the *Durchmusterung* we find it estimated only